Amendment to the Claims

In the Claims:

Please cancel Claims 21 – 35 (non-elected in response to Restriction) and amend Claims 1, 4, 6, 7, 9, 36, 38 – 43, and 46, as follows:

1. (Currently Amended) A compact scanner, comprising:

(a) a waveguide that conveys light between a proximal and a distal end, said waveguide having an effective light source position proximate to the distal end;

(b) an optical component that is attached to the distal end of the waveguide, said optical component reducing a numerical aperture of the lensed waveguide; and

(c) an actuator for exciting a portion of the waveguide that is adjacent to the distal end and is cantilevered from the actuator to vibrate at a desired frequency and in a desired pattern, excitation of the portion of the waveguide that is cantilevered from the actuator causing a rotation to occur for scanning a region with light from the optical component, wherein a characteristic of the light emitted from the optical component is selectively determined by controlling a spatial relationship between the effective light source position and at least one of:

(i) a back focal point of the optical component; and

(ii) a location of a vibratory node of the portion of the waveguide that is cantilevered from the actuator.

2. (Original) The compact scanner of Claim 1, wherein excitation of the portion of the waveguide that is cantilevered from the actuator also causes a translation of a distal end of said portion to occur for scanning the region with the light from the optical component.

3. (Original) The compact scanner of Claim 2, wherein a portion of the region scanned as a result of the rotation is substantially greater than that scanned as a result of the translation.

4. (Currently Amended) The compact scanner of Claim 1, wherein the waveguide includes an effective light source, and wherein the optical component and the waveguide are configured so that ~~a~~ the vibratory node of the waveguide is substantially coincident with ~~a~~ the position of the effective light source.

5. (Original) The compact scanner of Claim 1, wherein the portion of the waveguide that is cantilevered from the actuator includes a region of substantially reduced cross-sectional area to more readily enable a lateral bending of said portion.

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6. (Currently Amended) The compact scanner of Claim 1, wherein the ~~optical component has a~~ back focal point ~~that~~ is substantially coincident with ~~a~~ the vibratory node of the waveguide.

7. (Currently Amended) The compact scanner of Claim 1, wherein the waveguide includes an effective light source, and wherein the ~~optical component has a~~ back focal point ~~that~~ is substantially coincident with ~~a position of~~ the effective light source position.

8. (Original) The compact scanner of Claim 7, wherein light exiting the optical component travels in a substantially collimated path.

9. (Currently Amended) The compact scanner of Claim 1, wherein the ~~optical component has a~~ back focal point ~~that~~ is distal relative to the effective light source position.

10. (Original) The compact scanner of Claim 9, wherein light exiting the optical component travels in a convergent path.

11. (Original) The compact scanner of Claim 1, wherein the waveguide comprises an optical fiber.

12. (Original) The compact scanner of Claim 5, wherein the region of substantially reduced cross-sectional area is etched to reduce the cross-sectional area of said region relative to adjacent portions of the waveguide that are not reduced in cross-sectional area.

13. (Original) The compact scanner of Claim 12, wherein the optical component is fused to the distal end of the waveguide, where the waveguide is not substantially reduced in cross-sectional area.

14. (Original) The compact scanner of Claim 5, wherein the region of substantially reduced cross-sectional area has a desired nonlinear shape.

15. (Original) The compact scanner of Claim 1, wherein the effective light source position corresponds to a point proximate to the distal end of the lensed waveguide where the waveguide is no longer internally guiding light.

16. (Original) The compact scanner of Claim 1, further comprising a scan lens that is disposed between the optical component and the region being scanned, said scan lens optically modifying the light exiting the optical component and incident on the region being scanned.

17. (Original) The compact scanner of Claim 1, wherein the optical component comprises one of a ball lens, a drum lens, a graded index (GRIN) lens, and a diffractive optical element.

18. (Original) The compact scanner of Claim 1, wherein the optical component comprises a section of a multimode optical fiber.

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19. (Original) The compact scanner of Claim 1, wherein the optical component has a back focal plane, further comprising a spacer for coupling the optical component to the distal end of the waveguide, said spacer being used to control a disposition of the vibratory node of the waveguide relative to the back focal plane of the optical component.

20. (Original) The compact scanner of Claim 1, wherein the actuator excites the portion of the waveguide that is cantilevered from the actuator to vibrate at a resonant frequency.

Claims 21 – 35 (Currently Canceled)

36. (Currently Amended) A method for scanning a region with light conveyed through a waveguide between a proximal end and a distal end of the waveguide, the distal end of the waveguide having an effective light source and a cantilevered portion, with an optical component being attached to the distal end of the waveguide, comprising the steps of:

(a) actuating the cantilevered portion of the waveguide to vibrate at a desired frequency and in a desired pattern; and

(b) controlling a dimensional configuration of the waveguide so as to position the effective light source in a desired relationship relative to at least one of:

(i) a back focal plane of the optical component; and

(ii) a vibratory node of the waveguide, said optical component being thereby caused to rotate when the cantilevered portion of the waveguide is vibrating, so that light exiting the optical component scans the region has a desired characteristic.

37. (Original) The method of Claim 36, further comprising the step of translating a distal end of the cantilevered portion of the waveguide so that the light exiting the optical component scans the region due to both the rotation and the translation of the optical component.

38. (Currently Amended) The method of Claim 36, further comprising the step of providing ~~an additional~~ a scan lens disposed between the region and the optical component for optically modifying the light exiting the optical component before the light thus modified is incident on the region.

39. (Currently Amended) The method of Claim 36, wherein the step of controlling the dimensional configuration of the waveguide comprises the step of ~~positioning~~ ensuring that the effective light source is substantially coincident with the vibratory node of the waveguide.

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40. (Currently Amended) The method of Claim 36, wherein the effective light source is disposed adjacent to the distal end of the waveguide where the waveguide ceases to guide light propagated through the waveguide, and wherein the step of controlling the dimensional configuration comprises the step of ~~selectively positioning~~ of ensuring that the effective light source ~~for the light~~ is substantially coincident with both ~~a~~ the back focal plane of the optical component and the vibratory node of the waveguide.

41. (Currently Amended) The method of Claim 36, wherein the effective light source is disposed adjacent to the distal end of the waveguide where the waveguide ceases to guide light propagated through the waveguide, and wherein the step of controlling the dimensional configuration comprises the step of ~~selectively positioning~~ ensuring that the effective light source ~~for the light~~ is more proximal, relative to ~~a~~ the back focal plane of the optical component.

42. (Currently Amended) The method of Claim 36, further comprising the step of moving the waveguide axially in synchrony with the vibration of the waveguide to compensate for an axial movement of ~~a position of~~ the effective light source ~~of the light~~ relative to the vibratory node caused by a deflection of the portion of the waveguide that is vibrating.

43. (Currently Amended) The method of Claim 36, further comprising the step of axially offsetting ~~a position of~~ the effective light source relative to the vibratory node to at least reduce a lateral displacement of ~~the position of~~ the effective light source relative to the vibratory node caused by a deflection of the portion of the waveguide that is vibrating.

44. (Original) The method of Claim 36, wherein the step of controlling the dimensional configuration of the waveguide comprises the step of reducing a cross-sectional area of the portion of the waveguide that is cantilevered, over a predefined length and by a predefined radial dimension.

45. (Original) The method of Claim 36, wherein the step of controlling the dimensional configuration of the waveguide comprises the step of reducing a cross-sectional area of the portion of the waveguide that is cantilevered, to form said portion of the waveguide in a non-linear shape.

46. (Currently Amended) The method of Claim 36, wherein ~~the optical component has a back focal point, and wherein~~ the step of controlling the dimensional configuration of the waveguide comprises the step of coupling the optical component to the distal end of the waveguide with a spacer of a longitudinal dimension selected to ensure that the back focal point of the optical component is substantially coincident with the vibratory node of the waveguide.

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47. (Original) The method of Claim 36, wherein the desired scan pattern causes the optical component to scan the region in one of a rectilinear, raster, circular, spiral, rotating linear, propeller, and Lissajous pattern.

48. (Original) The method of Claim 36, wherein the optical component comprises one of a ball lens, a drum lens, a graded index (GRIN) lens, and a diffractive optical element.

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